A Borehole Geothermal Database for the US Exclusive Economic Zone of the Gulf of Mexico

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Exclusive Economic Zone:

200 nautical miles from the shoreline or the edge of the continental shelf, whichever is farther.

The country has exclusive rights for exploitation and use of marine (including sub-seafloor) resources within its EEZ.
Rules for Natural Resources Exploitation in the US EEZ

A company can claim exclusive rights (e.g., drilling and oil/gas production) over a piece of seafloor (and water above) by obtaining a ‘lease’ from the Federal Government. The Bureau of Ocean Energy Management, Regulation and Enforcement (formerly known as Minerals Management Service) oversees the leasing and exploitation activities.

The companies are expected to deliver the geologic and engineering data they obtained from their drilling activities in their leased areas to BOEMRE.

BOEMRE makes the data available to the public after 2 years, if requested.

The data include:

• Scanned copies of wire-line logs
• Velocity surveys
• Formation test results (RFT and MDT)
• Reports on other tests and analyses
Bottom-hole (maximum recorded) temperature data are recorded in the log header.
One can estimate the pre-drilling formation temperature by observing the way bottom-hole temperature changes over time after the well has been shut.

Bottom-hole Temperature Data
Mobile 999 OCS-G7863 Well #1

<table>
<thead>
<tr>
<th>Run</th>
<th>Time Circulation Stopped</th>
<th>Time Logger On Bottom</th>
<th>Sub-bottom Depth (m)</th>
<th>Shut-in Time</th>
<th>BHT (°C)</th>
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</thead>
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</table>

after Nagihara and Smith (2005)
The pre-drilling (true) formation temperature can be higher than the reported BHT by anywhere between 3°C to 30°C.
Status of the Data Compilation Effort: June 6, 2011

- Nearly 1000 corrected BHTs obtained from ~750 wells
- Wire-line logs and other well data from ~2900 wells
- Data coverage for the Texas Continental Shelf near completion
In geographic information systems (GIS), all data are linked to features on maps. Multiple databases can be cross-referenced via a common attribute or mapped feature.
A typical procedure for a quick analysis using the corrected BHT database in GIS

Step 1: Find an area of your interest and locate the wells in it.
Step 2: Obtain the information on the wells themselves.
Step 3: Find the corrected BHTs for the wells in a cross-referenced database. Step 4: Make a temperatures vs. depth graph.
Step 5: Derivative databases are generated from the Corrected BHT and other databases.

Thermal gradients:
3 – 5-km depth interval
Isotherms are elevated in the vicinity of the Corsair growth fault zone.
Energy production infrastructure is already in place.
Hard-working students at Texas Tech Geosciences Department

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